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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,901	10/24/2003	Arnold Kholodenko	4118C01/ETCH/ECT	8712

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Patent Counsel
Applied Materials, Inc.
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EXAMINER

PAIK, SANG YEOP

ART UNIT	PAPER NUMBER
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3742

DATE MAILED: 04/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/692,901	Applicant(s) KHOLODENKO ET AL.	
	Examiner Sang Y Paik	Art Unit 3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/24/03</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumura et al (US 5,151,871) in view of Tamura et al (US 4,549,073) or Orosy et al (US 3,789,190) and Carroll (US 4,795,884).

Matsumura et al discloses a substrate support with a heater electrode disposed in a semiconductor substrate processing chamber and a power source connected to the heater electrode. However, Matsumura does not disclose a meter and a controller to regulate power to the heater electrode by measuring the resistivity of the heater electrode.

Tamura et al or Orosy et al discloses a controller to regulate and determine an electrical resistance of a heating element whose resistance changes with the changes in the temperature of the heating element. Tamura et al or Orosy et al further discloses that the measured resistance of the heating element is compared to a predetermined resistance of the desired temperature to achieve the desired heating temperature. Carroll discloses a voltmeter connected to an electrical resistance element whose resistance changes with the change in the temperature to measure the actual voltage drop across the electrical resistance element.

It would have been obvious to one of ordinary skill in the art to adapt Matsumura et al with a controller shown in Tamura et al or Orosy et al to control the temperature of the heater

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electrode by regulating its electrical resistance, and in view of Carroll, it would have been obvious to one of ordinary skill in the art to adapt Matsumura et al with a meter to better enable the user to inspect the operating condition of the electrical device and further apply such meter to enhance better control of the applying voltage for producing the desired temperature.

With respect to claim 2, 8 and 9, Matsumura et al further discloses that the heating element is made of molybdenum; and since it is well known that the power to generate heat is directly related to the voltage and current (i.e. $\text{power} = \text{voltage} \times \text{current}$), when the temperature of the heater is low, it needs to increase voltage and current to bring the heater to a desired heating temperature and to decrease the voltage and current level when the temperature of the heater is high to bring down the temperature to a desired level.

3. Claims 11-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumura et al in view of Tamura et al or Orosoy et al and Carroll as applied to claims 1-10 above, and further in view of Niori et al (US 5,280,156).

Matsumura et al in view of Tamura et al or Orosoy et al and Carroll shows the apparatus claimed except a substrate support with a heater electrode embedded therein.

Niori et al shows a substrate support having a heater electrode embedded therein. In view of Niori et al, it would have been obvious to one of ordinary skill in the art to adapt Matsumura, as modified by Tamura et al or Orosoy et al and Carroll, with a substrate support having a heater embedded there in as an alternative support substrate that can also alternatively provide a uniformly heated support substrate to heat a semiconductor substrate such as a wafer.

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4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Y Paik whose telephone number is 703-308-1147. The examiner can normally be reached on M-F (6:30-4:00) First Friday Off.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Paik

Sang Y Paik
Primary Examiner
Art Unit 3742

syp